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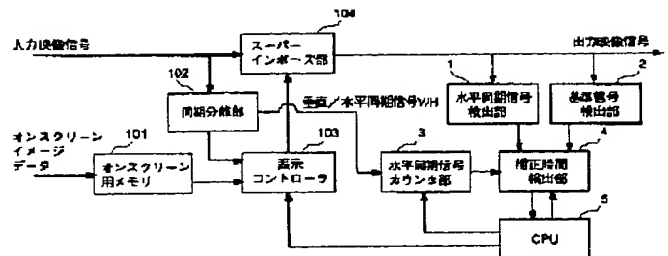
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TITLE : ON-SCREEN DISPLAY POSITION
CORRECTION DEVICE



ABSTRACT : PROBLEM TO BE SOLVED: To adjust the on-screen display position automatically regardless of dispersion in the electronic circuit without manual operation by measuring a time from the leading of a horizontal synchronizing signal till the leading of a display signal.

SOLUTION: A correction time detection section 4 detects a leading of a horizontal synchronizing signal H placed just before a reference signal Rf based on an output of a horizontal synchronizing signal counter section 3 and an output of a horizontal synchronizing signal detection section 1 and then detects the leading of the reference signal Rf based on an output of a reference signal detection section 2 to obtain a time T1 between both the leading signals. Then an on-screen display signal Ons1 is displayed at a reference position in a horizontal direction for the on-screen display at a display device and a time T2 is detected similarly to the case with obtaining the time T1. Then a difference between the times T1 and T2 is discriminated to be a deviation between the on-screen display positions and a display controller 103 is controlled to adjust the start position of the on-screen signal Ons1 to correct the display position.

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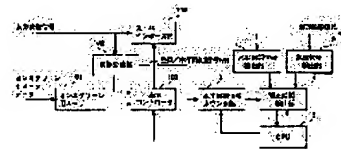
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(54) ON-SCREEN DISPLAY POSITION CORRECTION DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To adjust the on-screen display position automatically regardless of dispersion in the electronic circuit without manual operation by measuring a time from the leading of a horizontal synchronizing signal till the leading of a display signal.

SOLUTION: A correction time detection section 4 detects a leading of a horizontal synchronizing signal H placed just before a reference signal Rf based on an output of a horizontal synchronizing signal counter section 3 and an output of a horizontal synchronizing signal detection section 1 and then detects the leading of the reference signal Rf based on an output of a reference signal detection section 2 to obtain a time T1 between both the leading signals. Then an on-screen display signal Ons1 is displayed at a reference position in a horizontal direction for the on-screen display at a display device and a time T2 is detected similarly to the case with obtaining the time T1. Then a difference between the times T1 and T2 is discriminated to be a deviation between the on-screen display positions and a display controller 103 is controlled to adjust the start position of the on-screen signal Ons1 to correct the display position.



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CLAIMS

[Claim(s)]

[Claim 1] An onscreen display-position compensator characterized by what is characterized by providing the following A means to superimpose a reference signal which is formed in a video signal sending area and shows a horizontal criteria location in a video signal on a horizontal scanning line A means to measure the 2nd time amount to a standup of signal , which it was prepared in a display which receives a video signal sent out from the above-mentioned video signal sending area, and indicated by onscreen one in a horizontal criteria location from the 1st time amount from a standup of a Horizontal Synchronizing signal in the last video output of this display to a standup of the above-mentioned reference signal, and a standup of a Horizontal Synchronizing signal in indicating by onscreen one by display side A means to be formed in a display side and to amend an onscreen display position according to a difference of the 1st time amount of the above, and the 2nd time amount

[Claim 2] An onscreen display-position compensator characterized by what is characterized by providing the following M reference signals ($M \geq 2$) which are formed in a video signal sending area and show a horizontal criteria location in a video signal So that a gap between these reference signals may become equal to time amount to a standup of a reference signal on which it is superimposed on a time-axis from a standup of a Horizontal Synchronizing signal the 1st M on a horizontal scanning line ($M \geq 2$) Time amount from a standup [in / it superimposes, is prepared in a display which receives a video signal sent out from the above-mentioned video signal sending area, and / the last video output of this display] of a Horizontal Synchronizing signal to a standup of the above-mentioned reference signal And a means to measure the 2nd time amount to a standup of signal , which calculated the average of time interval , of M-1 piece between each reference signal as the 1st time amount, and indicated by onscreen one from a standup of a Horizontal Synchronizing signal in a horizontal criteria location in indicating by onscreen one by display side A means to be formed in a display side and to amend an onscreen display position on this display according to a difference of the 1st time amount of the above, and the 2nd time amount

[Claim 3] An onscreen display-position compensator characterized by what is characterized by providing the following The 1st reference signal which is formed in a video signal sending area and shows a horizontal criteria location in a video signal A means to superimpose the 2nd reference signal which opened a gap equivalent to the number of dots which can be displayed on 1 horizontal scanning line, and has been arranged on a horizontal scanning line, respectively A means to be formed in a display which receives a video signal sent out from the above-mentioned video signal sending area, and to measure the 1st time amount from a standup of a Horizontal Synchronizing signal in the last video output of this display to a standup of the 1st reference signal of the above, and the 2nd time amount from a standup of the 1st reference signal of the above to a standup of the 2nd reference signal of the above A signal which has length equivalent to the number of dots on 1 horizontal scanning line which was formed in the above-mentioned display, began from a criteria location horizontal on this display, and was specified beforehand The 3rd time amount to a standup of a signal which indicated by this onscreen one from a standup of a Horizontal Synchronizing signal in indicating by onscreen one on a specific horizontal scanning line, And a means to measure the 4th time amount from a standup of this signal that indicated by onscreen one to the falling, A means to be formed in a display side, to amend an onscreen display starting position according to a difference of the 1st time amount of the above, and the 3rd time amount, and to amend a display position of an onscreen indicator-chart form, and a display size according to a difference of the 2nd time amount of the above, and the 4th time amount of the above

[Claim 4] An onscreen display-position compensator characterized by what is characterized by providing the following A means to superimpose a reference signal which is formed in a video signal sending area and shows a horizontal criteria location in a video signal on a horizontal scanning line A means to be formed in a video signal sending area, to generate a trigger signal which notifies superposition of the above-mentioned reference signal, and to send out with the above-mentioned video signal It is prepared in a display which receives a video signal sent out from the above-mentioned video signal sending area. The 1st time amount from a standup of a Horizontal Synchronizing signal in the last video output of the above-mentioned display to a standup of the above-mentioned reference signal when existence of the above-mentioned trigger signal transmitted from an image sending area is judged and this trigger signal is detected, And a means to measure the 2nd time amount to a standup of signal , which indicated by onscreen one from a standup of a Horizontal Synchronizing signal in a horizontal criteria location in indicating by onscreen one by display side A means to save this correction value until it is prepared in a display side, and is prepared in a display side as well as a means to amend an onscreen display position by display side according to a difference of the 1st time amount of the above, and the 2nd time amount and it detects the

above-mentioned trigger signal again

[Claim 5] An onscreen display-position automatic compensator characterized by constituting a trigger signal which notifies superposition of the above-mentioned reference signal with a sound signal in an onscreen display-position automatic compensator according to claim 4.

[Claim 6] An onscreen display-position compensator characterized by what is characterized by providing the following A means to superimpose a reference signal which is formed in a video signal sending area and serves as a criteria location of a perpendicular direction in a video signal on a horizontal scanning line A means to amend an onscreen display position so that a horizontal scanning line by which it was superimposed on this reference signal may be made into a criteria location of a perpendicular direction in a display, being prepared in a display which receives a video signal sent out from the above-mentioned video signal sending area, and supervising the above-mentioned reference signal in the last video output of this display

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] Especially this invention relates to the onscreen display technology which piles up and displays two video signals about an onscreen display-position compensator.

[0002]

[Description of the Prior Art] An example of the onscreen display circuit more generally than before used as circuitry used for an onscreen display is shown in drawing 12. drawing 12 -- setting -- 101 -- onscreen one -- business -- as for the synchronizing separation section and 103, memory and 102 are [a display controller and 104] the superimposition sections. To the inputted video signal 100, in the synchronizing separation section 102, a synchronizing signal is separated from this input video signal 100, and a Horizontal Synchronizing signal and a Vertical Synchronizing signal are taken out. this, simultaneously onscreen one -- business -- image-data 100b which performs an onscreen display is written in memory 101 to the inputted video signal 100. the display controller 103 -- onscreen one -- business -- from image-data 100b written in and outputted to memory 101 from this, and the perpendicular and Horizontal Synchronizing signals 102a and 102b which were outputted from the synchronizing separation section 102, the input video signal 100, the image picture signal which was able to take the synchronization, and change signal 103a are generated, and this is given to the superimposition section 104. changing and outputting image picture signal 103a which is the input video signal 100 and the output of the display controller 103 in the superimposition section 104 by control of change signal 103a which is the output of the display controller 103 -- the input video signal 100 -- receiving -- onscreen one -- business -- the onscreen display of the image data written in memory 101 is realized.

[0003]

[Problem(s) to be Solved by the Invention] In an image transmission system, a video signal is transmitted from an image sending area to the display which is an image receiving side, and the received video signal is displayed on a screen with a display. Moreover, in a display, an onscreen display is performed to the image which carries out a screen display. The contents of the onscreen display are cursor which directs the selection branch currently drawn for example, into the image. A user operates the above-mentioned cursor by which it was indicated by onscreen one with infrared remote control etc.

[0004] In order to realize such a user interface, the positional information of the cursor which indicates by onscreen one on each image with a video signal from an image sending area, or a carbon button is given to a display. In an indicating-equipment side, cursor and the carbon button are indicated by onscreen one based on the received positional information to the image which carries out a screen display. That is, it is necessary to perform an onscreen display in the location which was displayed and was specified from the image sending area according to the contents of the **** onscreen screen.

[0005] However, when the above-mentioned conventional onscreen display circuit is used, in order to make in agreement the location meant by the image sending area, and the location by which it is actually indicated by onscreen one by the display side, eye measurement or a measuring instrument was used by the display side, and there was a problem that positioning of an onscreen display had to be performed. That is, after attaching the volume which can adjust an onscreen display position manually to the indicating equipment and performing an onscreen display to an indicating equipment, the above-mentioned volume is adjusted, and it is adjusting manually so that an onscreen display may be made in a desired location.

[0006] Moreover, when it was easy to produce individual difference in the synchronizing separation section 102 which the individual difference on an electronic circuitry may produce and is especially shown in drawing 12 in a display and this arose, onscreen display positions will differ for every display, and there was a problem that it was necessary to adjust a further different onscreen display position for every display, corresponding to this.

[0007] In case this invention was made in order to cancel the above troubles, and it performs an onscreen display with the display which is an image receiving side, it aims at offering the onscreen display-position automatic compensator which can carry out the automatic regulation of the onscreen display position irrespective of the individual difference on an electronic circuitry, without depending the location meant by the image sending area, and the location by which it is actually indicated by onscreen one by the display side on hand control.

[0008]

[Means for Solving the Problem] In order to solve this technical problem, an onscreen display-position compensator concerning invention of claim 1 A means to superimpose a reference signal which is formed in a video signal sending area

and shows a horizontal criteria location in a video signal on this video signal, It is prepared in a display which receives a video signal sent out from the above-mentioned video signal sending area. The 1st time amount from a standup of a Horizontal Synchronizing signal in the last video output of this display to a standup of the above-mentioned reference signal, And a means to measure the 2nd time amount to a standup of signal, which indicated by onscreen one from a standup of a Horizontal Synchronizing signal in a horizontal criteria location in indicating by onscreen one by display side, It is prepared in a display side and characterized by what it had a means to amend an onscreen display position for according to a difference of the 1st time amount of the above, and the 2nd time amount.

[0009] An onscreen display-position compensator concerning invention of claim 2 M reference signals ($M \geq 2$) which are formed in a video signal sending area and show a horizontal criteria location in a video signal So that a gap between these reference signals may become equal to time amount to a standup of a reference signal on which it is superimposed on a time-axis from a standup of a Horizontal Synchronizing signal the 1st M on a horizontal scanning line ($M \geq 2$) Time amount from a standup [in / it superimposes, is prepared in a display which receives a video signal sent out from the above-mentioned video signal sending area, and / the last video output of this display] of a Horizontal Synchronizing signal to a standup of the above-mentioned reference signal, And the average of time interval, of M-1 piece between each reference signal is calculated as the 1st time amount. And a means to measure the 2nd time amount to a standup of signal, which indicated by onscreen one in a horizontal criteria location equivalent to indicating by onscreen one in a display side from a standup of a Horizontal Synchronizing signal in this last video output, It is prepared in a display side and characterized by what it had a means to amend an onscreen display position on this display for according to a difference of the 1st time amount of the above, and the 2nd time amount.

[0010] An onscreen display-position compensator concerning invention of claim 3 The 1st reference signal which is formed in a video signal sending area and shows a horizontal criteria location in a video signal, A means to superimpose the 2nd reference signal which opened a gap equivalent to the number of dots which can be displayed on 1 horizontal scanning line, and has been arranged on a horizontal scanning line, respectively, It is prepared in a display which receives a video signal sent out from the above-mentioned video signal sending area. The 1st time amount from a standup of a Horizontal Synchronizing signal in the last video output of this display to a standup of the 1st reference signal of the above, And a means to measure the 2nd time amount from a standup of the 1st reference signal of the above to a standup of the 2nd reference signal of the above, A signal which has length equivalent to the number of dots on 1 horizontal scanning line which was formed in the above-mentioned display, began from a criteria location horizontal on this display, and was specified beforehand The 3rd time amount to a standup of a signal which indicated by this onscreen one from a standup of a Horizontal Synchronizing signal in indicating by onscreen one on a specific horizontal scanning line, And a means to measure the 4th time amount from a standup of this signal that indicated by onscreen one to the falling, It is prepared in a display side and a difference of the 1st time amount of the above and the 3rd time amount is embraced. An onscreen display starting position is amended and it is characterized by what it had a display position of an onscreen indicator-chart form, and a means to amend a display size for according to a difference of the 2nd time amount of the above, and the 4th time amount of the above.

[0011] An onscreen display-position compensator concerning invention of claim 4 A means to superimpose a reference signal which is formed in a video signal sending area and shows a horizontal criteria location in a video signal on a horizontal scanning line, A means to be formed in a video signal sending area, to generate a trigger signal which notifies superposition of the above-mentioned reference signal, and to send out with the above-mentioned video signal, It is prepared in a display which receives a video signal sent out from the above-mentioned video signal sending area. The 1st time amount from a standup of a Horizontal Synchronizing signal in the last video output of the above-mentioned display to a standup of the above-mentioned reference signal when existence of the above-mentioned trigger signal transmitted from an image sending area is judged and this trigger signal is detected, And a means to measure the 2nd time amount to a standup of signal, which indicated by onscreen one in a horizontal criteria location equivalent to indicating by onscreen one in a display side from a standup of a Horizontal Synchronizing signal, It is prepared in a display side and characterized by what it had a means to amend an onscreen display position by display side according to a difference of the 1st time amount of the above, and the 2nd time amount, and a means to save this correction value until it is similarly prepared in a display side and detects the above-mentioned trigger signal again for.

[0012] A trigger signal to which an onscreen display-position compensator concerning invention of claim 5 notifies superposition of the above-mentioned reference signal in an onscreen display-position automatic compensator of above-mentioned claim 4 is characterized by what a sound signal constituted.

[0013] An onscreen display-position compensator concerning invention of claim 6 A means to superimpose a reference signal on a horizontal scanning line which is formed in a video signal sending area and serves as a criteria location of a perpendicular direction in a video signal, Being prepared in a display which receives a video signal sent out from the above-mentioned video signal sending area, and supervising the above-mentioned reference signal in the last video output of this display It is characterized by what it had a means to amend an onscreen display position so that a horizontal scanning line by which it was superimposed on this reference signal may be made into a criteria location of a perpendicular direction in a display for.

[0014]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained, referring to a drawing. (Gestalt 1 of operation) Drawing 1 shows the onscreen display circuit in an onscreen display-position compensator by the gestalt 1 of operation of this invention.

[0015] In drawing 1, that the same portion as drawing 12 is the same or the amendment time amount detecting element which a considerable portion is shown, the reference signal detecting element which detects the reference signal with which it was superimposed on 1 by the Horizontal Synchronizing signal detecting element, and was superimposed on 2 in the image sending area in drawing 1, and 3 ask for the Horizontal Synchronizing signal counter section, and 4 asks for the amendment time amount of an onscreen display position, and 5 are CPUs.

[0016] Hereafter, actuation of the onscreen display-position compensator by the gestalt 1 of this operation is explained using drawing 1 and drawing 2. First, reference signal Rf which expresses the criteria location of a video signal horizontal on the Mth horizontal scanning line (the Mth horizontal scanning line) of the video signal to send out as shown in drawing 2 with an image sending area It superimposes. The square wave which has a steep edge as the above-mentioned reference signal is desirable. This reference signal shows the coordinate 0 of a horizontal axis, i.e., the location of vertical axes, in "the system of coordinates of an image sending area."

[0017] Supposing an image sending area creates a still picture image as shown in drawing 13, when it receives a screen like drawing 13 in a display side, as they have meant the system of coordinates made into criteria here in case "the system of coordinates of an image sending area" create the image source and data which an image sending area should send out, for example, it is shown in drawing 14, in addition to the screen shown in this drawing 13, the cursor CS is indicated by onscreen one. Under the present circumstances, since it is required that a viewer should display through an actuation machine on one item of the information 2. TV shopping 3. facility reservation from 1. city office, Cursor CS On the screen shown in drawing 14, in order to double a location with Cursor CS with the image of each item, such as "information from 1. city office" From an image sending area, data is superimposed on a video signal by using positional information of each item as coordinate data, for example, it is necessary to make it direct to a display by the method of transmitting data by another circuit. As these "system of coordinates of an image sending area", system of coordinates as shown in drawing 15 can be considered, for example.

[0018] In a display side, as shown in drawing 1, amendment of an onscreen display position is started according to directions of CPU5. That is, the count of Horizontal Synchronizing signal H outputted from the synchronizing separation section 102 in the Horizontal Synchronizing signal counter section 3 according to directions of CPU5 is started, and the monitor to the output of the Horizontal Synchronizing signal detecting element 1, the output of the reference signal detecting element 2, and the output of the Horizontal Synchronizing signal counter section 3 is started in the amendment time amount detecting element 4.

[0019] That is, by the Horizontal Synchronizing signal detecting element 1, Horizontal Synchronizing signal H is detected first. Detection of this Horizontal Synchronizing signal H is realized by setting it as the level A which shows the threshold in the comparator in this detecting element 1 to drawing 2. The reference signal detecting element 2 is the reference signal Rf which the video signal sending area superimposed. It detects, and although the configuration uses a comparator like the Horizontal Synchronizing signal detecting element 1, it is set as the level B which shows a threshold to drawing 2. Based on Vertical Synchronizing signal V and Horizontal Synchronizing signal H which are outputted from the synchronizing separation section 102, by counting Horizontal Synchronizing signal H, the Mth horizontal scanning line specified from CPU5 is detected, and a result is outputted to the amendment time amount detecting element 4 in the Horizontal Synchronizing signal counter section 3. In addition, the counter in the Horizontal Synchronizing signal counter section 3 shall be reset with Vertical Synchronizing signal V outputted from the synchronizing separation section 102.

[0020] Next, reference signal Rf shown in drawing 2 in the amendment time amount detecting element 4 with the output of the Horizontal Synchronizing signal counter section 3, and the output of the Horizontal Synchronizing signal detecting element 1 The standup of Horizontal Synchronizing signal H located immediately before is detectable. They are Horizontal Synchronizing signal H and a reference signal Rf here. In between, the color burst signal CB is inserted. Then, the counter which the amendment time amount detecting element 4 has is first started by making the standup of above-mentioned Horizontal Synchronizing signal H into a trigger, and it is a reference signal Rf from the output of the after that and reference signal detecting element 2. If a standup is detected, this amendment time amount detecting element 4 will stop the above-mentioned counter. As mentioned above, time amount T1 in drawing 2 It can ask.

[0021] Next, the signal (on the screen of a display, it is equivalent to a screen left end location) and Ons1 which indicated by onscreen one by the display side in the horizontal criteria location which is in charge of the onscreen display by the side of a display on the Nth horizontal scanning line (the Nth horizontal scanning line) of a video signal as shown in drawing 3 It indicates by onscreen one. In order to make more into accuracy detection of a signal which indicated [above-mentioned] by onscreen one, it is desirable not to put a video signal on the neighborhood which indicates by onscreen one, or the Nth whole horizontal scanning line, but to superimpose "the signal near 0IRE" (here, for IRE to be an unit which shows the voltage level of a video signal, therefore for "the signal near 0IRE" to mean "the signal near black level" or "a signal with a small voltage level"). And time amount T1 Time amount T2 shown in drawing 3 like the method searched for It detects.

[0022] And the above-mentioned time amount T1 T2 A difference is judged as a gap of an onscreen display position, the display controller 103 is controlled, and it is the above-mentioned time amount T1. T2 A difference is embraced and it is, the horizontal starting position Ons1, i.e., the onscreen signal, of an onscreen display. By adjusting a starting position, it becomes possible to amend a display position.

[0023] in addition, the above-mentioned time amount T1 T2 except for the method of controlling a display controller as a method of adjusting an onscreen display position, according to a difference -- the above-mentioned time amount T1 the difference of T2 -- a coordinate value -- converting -- onscreen one -- business -- it is also possible by adjusting the address at

the time of writing an onscreen image data in memory 101 to carry out.

[0024] It becomes possible to amend automatically the gap with a horizontal criteria location [in / on the gestalt 1 of such this operation, and / the onscreen display of a display], and the criteria location which an image sending area means. Therefore, the adjustment production process in development and the manufacturing process of a display, i.e., the man day reduction of activities which was performing positioning of an onscreen display using eye measurement or a measuring instrument by the display side, becomes possible, and productivity can be improved. Moreover, although this criteria location may change if it is not made not to double a criteria location with the creation time of the hard cause by exchange of the device used by the image sending area also when modification of a criteria location occurs in an image sending area in systems operation etc., or the sending-out image source intentionally Thus, when modification of a criteria location occurs in systems operation, an automatic regulation becomes possible, and after-sale service nature can be improved. furthermore, since location amendment is realized using the final output of a display, when [the gestalt 1 of this operation] location amendment is performed in the middle of the circuit in a display Although all displays must adjust a part for the combination of the amendment part when two or more amendment parts exist, as mentioned above Location amendment independent of the individual difference of the electronic circuitry used for an onscreen display circuit can be performed allowing each of the above-mentioned two or more amendment part a solid-state difference by performing this by the final output of a display, and adjustment for every display can be made unnecessary.

[0025] (Gestalt 2 of operation) The gestalt 2 of operation of this invention superimposes the 1st thru/or m-th m reference signal Rf1-Rfm on the Mth horizontal scanning line of a video signal in an image sending area, as shown in drawing 4 . The thing with the square wave desirable as the above-mentioned reference signal here which all has a steep edge is the same also in the gestalt 1 of the above-mentioned implementation.

[0026] The 1st signal Rf 1 of the above-mentioned reference signal expresses the starting position of a horizontal video signal, and shows the coordinate 0 of a horizontal axis, i.e., the location of vertical axes, in the system of coordinates of an image sending area.

[0027] moreover -- two -- a position -- from -- m -- a position -- a reference signal -- Rf -- two -- -- Rfm -- respectively -- regular intervals -- arranging -- having -- **** -- those -- a time interval -- T -- two -- ' -- -- Tm -- ' -- the -- one -- a reference signal -- Rf -- one -- just before -- being located -- a Horizontal Synchronizing signal -- H -- a standup -- from -- the -- one -- a reference signal -- Rf -- one -- a standup -- up to -- time amount -- T -- one -- That is, all the time intervals from falling of the reference signal of eye n ($1 \leq n \leq m - 1$) watch of arbitration (n+1) to the standup of the reference signal of eye watch are T1' and an equal.

[0028] The onscreen display circuit by the side of a display in the gestalt 2 of this operation is the same as that of drawing 1 , and the onscreen display-position compensator by the gestalt 2 of this operation is explained using drawing 1 and drawing 4 .

[0029] First, Horizontal Synchronizing signal H is detected by the Horizontal Synchronizing signal detecting element 1. Detection of this Horizontal Synchronizing signal H is realized by setting it as the level A which shows the threshold in the comparator in this detecting element 1 to drawing 4 . The reference signal detecting element 2 detects the reference signals Rf1-Rfm which the video signal sending area superimposed, and although the configuration uses a comparator like the Horizontal Synchronizing signal detecting element 1, it sets it as the level B which shows a threshold to drawing 4 . In the Horizontal Synchronizing signal counter section 3, based on Vertical Synchronizing signal V and Horizontal Synchronizing signal H which are outputted from the synchronizing separation section 102, Horizontal Synchronizing signal H is counted, the Mth horizontal scanning line specified from CPU5 is detected, and a result is outputted to the amendment time amount detecting element 4.

[0030] In addition, the counter in the Horizontal Synchronizing signal counter section 3 shall be reset with Vertical Synchronizing signal V outputted from the synchronizing separation section 102.

[0031] In the amendment time amount detecting element 4, next, from the output of the Horizontal Synchronizing signal counter section 3 the standup (this -- between the 1st reference signal Rf 1 and above-mentioned Horizontal Synchronizing signal H) of Horizontal Synchronizing signal H located just before the 1st reference signal Rf 1 shown in drawing 4 In the gestalt 1 of operation, each standup of the reference signals Rf1-Rfm from the 1st to the m-th with which the color burst signal CB is inserted, to detect and which can carry out things and are shown in drawing 4 from the output of the reference signal detecting element 2, and falling are detectable similarly. Then, when the counter which the amendment time amount detecting element 4 has is first started by having made the standup of Horizontal Synchronizing signal H into the trigger and the standup of the 1st reference signal Rf 1 is detected from the output of the reference signal detecting element 2 after that, the above-mentioned counter is stopped.

[0032] Furthermore, after outputting the counter value of the above-mentioned counter, i.e., the time amount of T1', to CPU5 through an I/O Port, the above-mentioned counter is reset. Next, the above-mentioned counter is started by making falling of the 1st above-mentioned reference signal Rf 1 into a trigger, the above-mentioned counter is stopped in the standup of the 2nd reference signal Rf 2, and it is the counter value of this counter, T2 [i.e.,]. Similarly time amount is notified to CPU5 through an I/O Port. Like the following, after detecting the time amount from T1' to Tm', in CPU5, the average T of the time amount from T1' to Tm' is calculated.

[0033] Next, time amount T2 shown in drawing 3 in a display side as the gestalt 1 of the above-mentioned implementation described It detects. Explanation is omitted about the actuation here.

[0034] And the average T from time amount T1' in above-mentioned drawing 4 to Tm' and time amount T2 of drawing 3 A difference is judged as a gap of an onscreen display position, the display controller 103 is controlled, and they are the

above-mentioned mean time T and the above-mentioned time amount T2. According to a difference, it becomes possible by adjusting the horizontal starting position of an onscreen display to amend a gap.

[0035] In addition, the above-mentioned mean time T and time amount T2 except for the method of controlling a display controller as a method of adjusting an onscreen display position, according to a difference -- the above-mentioned mean time T and time amount T2 a difference -- a coordinate value -- converting -- onscreen one -- business -- it is also possible by adjusting the address at the time of writing an onscreen image data in memory 101 to carry out.

[0036] In the gestalt 2 of such this operation, also when the reference signal with which a video signal is overlapped on a noise by the paste and the image sending area on a transmission line has not recognized correctly probably, the error of the comparator which detects a reference signal can be mitigated. That is, if correctly measurable by $T2' - Tm'$ even if a noise is not, for example, able to measure time amount of a paste and exact $T1'$ at the section of $T1'$ shown in drawing 4, an error is mitigable by taking the average. Moreover, the precision of detection of a horizontal criteria location and amendment of an onscreen display position can be raised more by superimposing a reference signal on two or more places in an image sending area.

[0037] (Gestalt 3 of operation) The gestalt 3 of operation of this invention superimposes two reference signals Rf1 and Rf2 on the Mth horizontal scanning line of a video signal in an image sending area, as shown in drawing 5. The 1st reference signal Rf 1 shown in drawing 5 is the coordinate 0 of a horizontal axis [in / by the standup / the system of coordinates of an image sending area], That is, the location of vertical axes is shown.

[0038] Moreover, the 2nd reference signal Rf 2 is arranged so that the gap from the standup of the 1st reference signal Rf 1 to the standup of the 2nd reference signal Rf 2 may turn into a gap of the number P of dots on 1 horizontal scanning line defined beforehand. Here, to how many dots it can display on the number P of dots, i.e., 1 horizontal scanning line, which can be displayed on 1 horizontal scanning line can display about 640 dots, if a 20MHz dot clock is used when performing an onscreen display to ordinary TV depending on the speed of the dot clock (radiator) which a graphic display device has. As the above-mentioned reference signal, the square wave which has an edge steep for starting, respectively is desirable here again.

[0039] The onscreen display circuit by the side of a display in the gestalt 3 of this operation is the same as that of drawing 1, using the 1st reference signal in drawing 5, about the method of amending the horizontal criteria location of an onscreen display in a display side, is as having described in the gestalt 1 of operation, and omits explanation here.

[0040] The difference of width of face of 1 dot by the side of an image sending area or image source creation and width of face of 1 dot which is in charge of the onscreen display by the side of a display is detected hereafter, and how to amend an onscreen display position is explained using drawing 1 and drawing 5 according to the difference. In the Horizontal Synchronizing signal counter section 3, it is a reference signal Rf at an image sending area. If the Mth horizontal scanning line on which it was superimposed is detected Supervise the output of the reference signal detecting element 2 by the amendment time amount detecting element 4, and the standup of the 1st reference signal in drawing 5 is made into a trigger. The above-mentioned time amount [in / by stopping the above-mentioned counter, when the counter which the amendment time amount detecting element 4 has is started and the standup of the reference signal Rf 2 of the above 2nd in drawing 5 is detected / drawing 5] $T1$ It is detectable. And the above-mentioned counter value can be read from CPU5, and the quotients $T1/P$ divided by the number P of dots on 1 horizontal scanning line which was able to define this beforehand can be obtained as width of face of 1 dot in an image sending area.

[0041] Next, as shown in drawing 6, only the number P of dots (equivalent to time amount T2) beforehand defined on the Nth horizontal scanning line performs an onscreen display. Signal Ons2 which indicated [above-mentioned] by onscreen one In order to make detection into accuracy more, it is desirable not to put a video signal on the neighborhood which indicates by onscreen one, or the Nth whole horizontal scanning line, but to superimpose ""the signal near 0IRE", i.e., "the signal near black level", and a signal with a small voltage level."

[0042] And if the Nth horizontal scanning line is detected in the Horizontal Synchronizing signal counter section 3 Onscreen signal [in / the output of the reference signal detecting element 2 is supervised by the amendment time amount detecting element 4, and / drawing 6] Ons2 The counter which the amendment time amount detecting element 4 has by making a standup into a trigger is started. Onscreen signal Ons2 Time amount [in / by stopping the above-mentioned counter, when falling is detected / drawing 6] $T2$ It is detectable. Thereby, the above-mentioned counter value can be read from CPU5, and quotient $T2 / P$ divided by the number P of dots on 1 horizontal scanning line which was able to define this beforehand can be obtained as width of face of 1 dot of the onscreen display by the display side.

[0043] As mentioned above, the difference of $T1 / P$, and $T2 / P$ is judged to be the difference of the width of face per dot an image sending area and by the side of a display. When an onscreen image is displayed on the coordinate location directed from the image sending area, the difference of the width of face per [above-mentioned] dot -- responding -- a coordinate -- amending -- thereby -- onscreen one -- business -- it becomes possible by adjusting the address at the time of writing an image data in memory 101 to amend the difference in width of face of 1 dot an image sending area and by the side of a display. for example, in displaying an onscreen indicator-chart form between the coordinate location (x y) directed from the image sending area as shown in drawing 7, and (x', y') being horizontal -- a coordinate -- a location -- one -- a dot -- per ($T1-T2$) -- /-- P -- only -- amending -- becoming -- ($-x+x$ -- * -- $\{(T1-T2) / -P\}$ -- y --) -- ($-x - ' - + - x - ' - * - \{(T1-T2) / -P\}$ -- y -- ' --) -- displaying -- as -- onscreen one -- business -- the address at the time of writing an onscreen indicator-chart form in memory 101 is adjusted.

[0044] In the gestalt 3 of such this operation, when horizontal width of face of 1 dot in the system of coordinates of an image sending area differs from width of face of 1 dot in the onscreen display by the side of a display, not only a horizontal criteria

location but the level axis of coordinates itself can be made in agreement by the image sending area and the display side. Therefore, it becomes possible by combining a video signal and an onscreen display to offer a precise user interface.

[0045] (Gestalt 4 of operation) Drawing 8 shows the onscreen display circuit equipped with the amendment time amount detecting element in the gestalt of operation of the 4th of this invention which amends an onscreen display position. Setting to drawing 8, the same portion as drawing 1 is the same or the trigger signal tr to which a considerable portion is shown and 6 notifies superposition of a reference signal. It is the trigger signal detecting element which detects from the signal sent out with the video signal, and outputs a control signal ctr to CPU5, and 7 is nonvolatile memory which saves the correction value of an onscreen display position.

[0046] Moreover, drawing 9 shows an example of the configuration of the trigger signal detecting element 6 of the gestalt 4 of this operation. The configuration of the trigger signal detecting element 6 shown in this drawing is a trigger signal tr. It is a thing at the time of carrying out and using a sound signal, and is the sound signal decoder which detects the signal of the specific pattern with which the tuner was specified for the antenna with which 201 receives a sound signal a, and 202, and a band pass filter and 204 were beforehand specified for 203.

[0047] Next, actuation is explained. If the signal of the specific pattern to which the specific frequency band was beforehand specified by the draw and the sound signal decoder 204 with the band pass filter 203 is detected from the signal to which received the sound signal a with the antenna 201, and it restored with the tuner 202, the sound signal decoder 204 will output a control signal ctr. Here, what is repeated several times is mentioned [opening a suitable gap and passing the signal of a certain frequency for several seconds as a signal of a specific pattern, and] as an example.

[0048] It is a trigger signal tr at the trigger signal detecting element 6. After detecting and outputting a control signal ctr to CPU5, it is the same method as what was shown in the gestalt 1 of the above-mentioned implementation, and the correction value of an onscreen display position is detected and an onscreen display position is amended. Furthermore, it saves by writing the detected correction value in nonvolatile memory 7, and is a trigger signal tr again. It becomes possible to hold the above-mentioned correction value until it receives.

[0049] In addition, although the trigger signal detecting element explained the example using the sound signal as a signal used as a trigger by the above explanation, this cannot be restricted to a sound signal, may use the signal superimposed on the signal from infrared remote control, the vertical-retrace-line period of a video signal, etc., and can realize it similarly.

[0050] In the gestalt 4 of such this operation, only when a trigger signal is received, it becomes possible by performing amendment processing of an onscreen display position to perform location amendment to the timing of arbitration if needed.

[0051] (Gestalt 5 of operation) Drawing 10 shows the onscreen display circuit equipped with the amendment time amount detecting element in the gestalt 5 of operation of this invention which amends an onscreen display position. Setting to drawing 10, the same portion as drawing 12 is the same, or the 1st which is the reference signal which showed the considerable portion, superimposed 301 on the Horizontal Synchronizing signal counter section, and superimposed 302 on the horizontal scanning line of a video signal, and which shows the criteria location of this perpendicular direction - the m-th signal S1, S2, --, Sm. The reference signal detecting element to detect, the reference signal counter section among which 303 counts the gap and the number of the above-mentioned reference signal, and 304 are CPUs.

[0052] First, an image sending area is the 1st of a specific pattern - the m-th signal S1, S2, --, Sm on the Mth horizontal scanning line of the video signal to which it is supposed that he wants to consider as a vertical criteria location. It superimposes. As an example of the signal of the above-mentioned specific pattern, as shown in drawing 11, what detaches each gap beyond fixed time amount, and arranges it is mentioned using m square waves. It sets to drawing 11 and they are each signals S1, S2, --, Sm. Gap T1 -Tm-1 It shall be taken more greatly than the time amount T0 ($T_0 > 0$) of the arbitration which has each.

[0053] In a display side, amendment of an onscreen display position is started according to directions of CPU304. First, according to directions of CPU304, the monitor to the output of the reference signal detecting element 302 is started in the reference signal counter section 303. In the reference signal detecting element 302, only the signal exceeding level A can be taken out by setting it as the level A which shows the threshold in a comparator to drawing 11 using a comparator. 1st signal S1 - which shows the reference signal counter section 303 to drawing 11 -- m-th signal Sm It counts and the counter in this reference signal counter section 303 is reset by 0 to the timing of Horizontal Synchronizing signal H with the output of the Horizontal Synchronizing signal counter section 301. the reference signal counter section 303 shows to drawing 11 -- each -- signal S1-Sm-1 The signal S2 of falling to each degree - Sm the time amount Tn ($1 \leq n \leq m-1$) to a standup -- measuring -- time amount Tn If the time amount T0 ($T_0 > 0$) defined beforehand is exceeded, the count of the reference signal counter section 303 will be counted up.

[0054] Thus, if the counter value of the reference signal counter section 303 is set to m, the reference signal counter section 303 will tell the purport which ended detection of wadding and a reference signal for the control signal ctr to CPU304. In addition, it is because it knows that the number of the reference signals which superimpose this on the horizontal scanning line M by the image sending area with a display is m. The above-mentioned reference signal S1 - Signal Sm which read the counter value of the counter in the Horizontal Synchronizing signal counter section 301, and the image sending area meant as a vertical criteria location, and sent out as mentioned above in CPU304 The number M of horizontal scanning line, on which it was superimposed can be obtained, and it can recognize as a vertical criteria location where the image sending area meant this.

[0055] Therefore, it becomes possible to amend a vertical onscreen display position by controlling the display controller 103 to change into the horizontal scanning line of the horizontal scanning wire gage M the horizontal scanning line which serves

as a vertical criteria location after the above actuation in performing an onscreen display in a display.

[0056] in addition, except for amendment of an onscreen display position being based on the method of controlling the display controller 103 -- onscreen one -- business -- it is also possible to carry out by correcting the address at the time of writing in an onscreen image data to memory 101.

[0057] In the gestalt 5 of such this operation, it becomes possible to amend automatically the gap with the criteria location of the perpendicular direction in the onscreen display of a display, i.e., the horizontal scanning line of arbitration, and the criteria location which an image sending area means, and, for this reason, the man day in adjustment production processes, such as measurement of the location gap by the measuring instrument in the development phase of a display and adjustment, can be reduced. Moreover, when a criteria location shifts in an image sending area during employment of a broadcast system, the effect of it becoming unnecessary to newly adjust a display can also be acquired.

[0058]

[Effect of the Invention] As mentioned above, according to invention of claim 1, the reference signal which shows the horizontal criteria location in a video signal by the video signal sending area is superimposed on a video signal. In the display which receives the video signal sent out from a video signal sending area The 1st time amount from the standup of a Horizontal Synchronizing signal to the standup of the above-mentioned reference signal is measured in the last video output of a display. In similarly indicating by onscreen one by the display side from the standup of a Horizontal Synchronizing signal, the 2nd time amount to the standup of a signal which indicated by onscreen one is measured in a horizontal criteria location. Since an onscreen display position shall be amended by the display side according to the difference of the 1st time amount of the above, and the 2nd time amount It becomes possible to amend automatically the gap with the horizontal criteria location in the onscreen display of a display, and the criteria location which an image sending area means, the man day reduction in the adjustment production process in development and the manufacturing process of a display is attained by this, and productivity can be improved. Moreover, since after-sale-service nature could improve since an automatic regulation becomes possible when modification of a criteria location occurs in an image sending area in systems operation, and location amendment has realized using the final output of a display further, the remarkable effect that amendment independent of the individual difference on the electronic circuitry used for an onscreen display circuit is attained, and the adjustment for every display becomes unnecessary is acquired.

[0059] According to invention of claim 2, the reference signal which shows the horizontal criteria location in a video signal by the video signal sending area is superimposed on M on a horizontal scanning line ($M \geq 2$). Moreover, those gaps It is arranged equally to the time amount to the standup of the reference signal on which the 1st is overlapped on a time-axis from the standup of a Horizontal Synchronizing signal. In the display which receives the video signal sent out from the above-mentioned video signal sending area The time amount from the standup of a Horizontal Synchronizing signal to the standup of the above-mentioned reference signal and the time interval of M-1 place between each reference signal are measured in the final output of this display. In making the average of each M time amount into the 1st time amount, and similarly indicating by onscreen one by the display side from the standup of a Horizontal Synchronizing signal, the 2nd time amount to the standup of a signal which indicated by onscreen one is measured in a horizontal criteria location. Since an onscreen display position shall be amended by the display side according to the difference of the 1st time amount of the above, and the 2nd time amount The remarkable effect that the precision of detection of a horizontal criteria location and amendment of an onscreen display position can be raised more is acquired by being able to mitigate the error of the comparator which detects a reference signal, and superimposing a reference signal on two or more places in an image sending area.

[0060] Moreover, the 1st reference signal which shows the horizontal criteria location of a video signal by the video signal sending area according to invention of claim 3, The 2nd reference signal which opened the gap equivalent to the number of dots which can be displayed on 1 horizontal scanning line, and has been arranged is superimposed on a horizontal scanning line, respectively. In the display which receives the video signal sent out from the above-mentioned video signal sending area Based on the last video output of a display, the 1st time amount from the standup of a Horizontal Synchronizing signal to the standup of the 1st reference signal, The 2nd time amount from the standup of the 1st reference signal to the standup of the 2nd reference signal is measured. By indicating by onscreen one the signal which has the length equivalent to the number of dots on 1 horizontal scanning line beforehand specified from the horizontal criteria location in the onscreen display of a display on a specific horizontal scanning line The 3rd time amount to the standup of a signal which indicated by onscreen one from the Horizontal Synchronizing signal, The 4th time amount from the standup of a signal which indicated by onscreen one to falling is measured. Since an onscreen display starting position shall be amended and the display position of an onscreen indicator-chart form and a display size shall be amended according to the difference of the 2nd time amount of the above, and the 4th time amount of the above according to the difference of the 1st time amount of the above, and the 3rd time amount when horizontal width of face of 1 dot in the system of coordinates of an image sending area differs from width of face of 1 dot in the onscreen display by the side of a display] Not only a horizontal criteria location but the level axis of coordinates itself can be made in agreement by the image sending area and the display side. This sake, By combining a video signal and an onscreen display, the remarkable effect of becoming possible to offer a precise user interface is acquired.

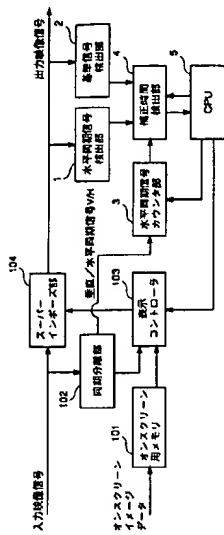
[0061] Moreover, while superimposing the reference signal which shows the horizontal criteria location of a video signal by the video signal sending area according to invention of claim 4 In the display which receives the video signal which sends out the trigger signal which notifies superposition of this reference signal with the above-mentioned video signal, and is sent out from the above-mentioned video signal sending area When the existence of the trigger signal transmitted from an image

sending area is judged and the above-mentioned trigger signal is detected, the 1st time amount from the standup of a Horizontal Synchronizing signal to the standup of the above-mentioned reference signal is measured in the last video output of a display. In similarly indicating by onscreen one by the display side from the standup of a Horizontal Synchronizing signal, the 2nd time amount to the standup of a signal which indicated by onscreen one is measured in a horizontal criteria location. While amending an onscreen display position by the display side according to the difference of the 1st time amount of the above, and the 2nd time amount Since this correction value shall be saved until it detects the above-mentioned trigger signal again, only when a trigger signal is received, the effect it is ineffective to it being possible to perform location amendment to the timing of arbitration is acquired by performing amendment processing of an onscreen display position if needed.

[0062] Moreover, according to invention of claim 6, a reference signal is superimposed on the horizontal scanning line which serves as a criteria location of the perpendicular direction in a video signal in a video signal sending area. In the display which receives the video signal sent out from the above-mentioned video signal sending area Since an onscreen display position shall be amended so that the horizontal scanning line by which it was superimposed on the reference signal may be made into the criteria location of the perpendicular direction in a display while supervising the above-mentioned reference signal in the last video output of this display It becomes possible to amend automatically the gap with the criteria location of the perpendicular direction in the onscreen display of a display, and the criteria location which an image sending area means, and the man day in the adjustment production process of the measurement and adjustment of a location gap by the measuring instrument in the development phase of a display can be reduced. Moreover, when a criteria location shifts in an image sending area into systems operation, the remarkable effect of it becoming unnecessary to newly adjust a display is acquired.

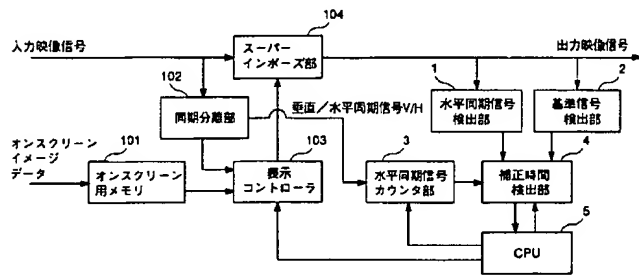
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Drawing selection Representative drawing ▼



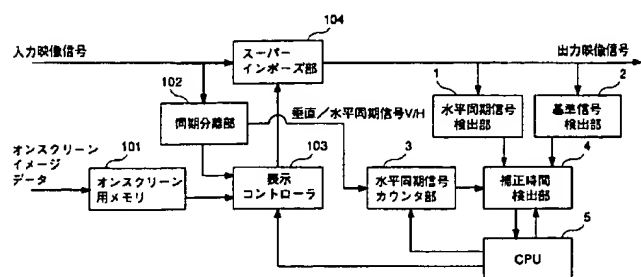
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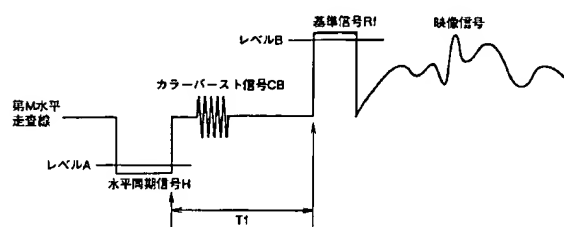
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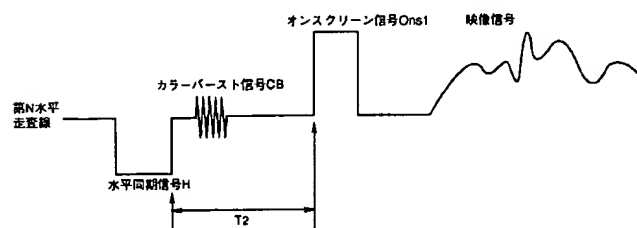
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Drawing selection ▼



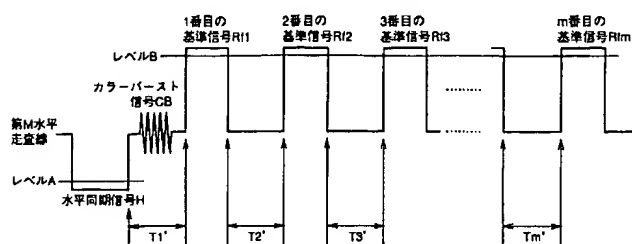
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Drawing selection ▼



[Translation done.]

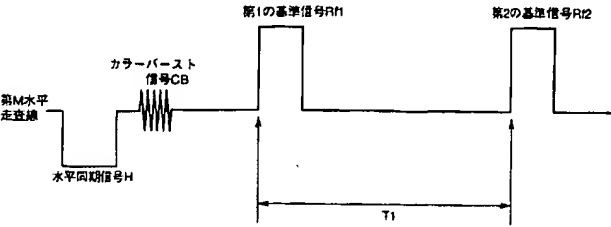
Drawing selection drawing 4



[Translation done.]

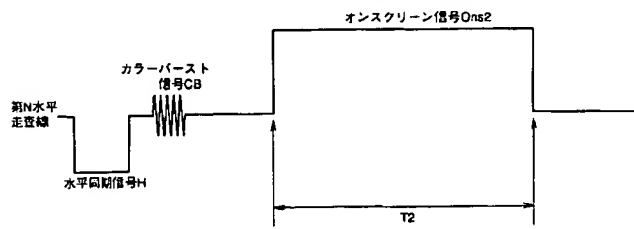
Drawing selection

drawing 5



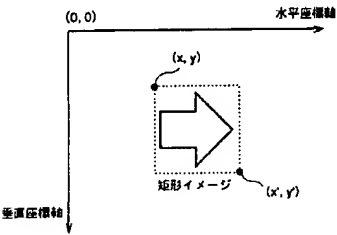
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Drawing selection drawing 6



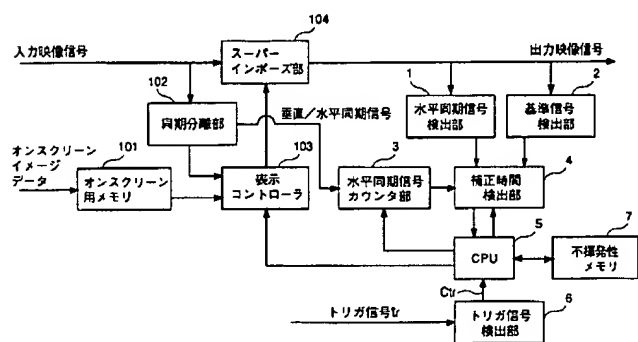
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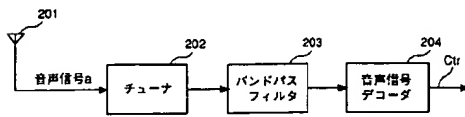
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Drawing selection drawing 8



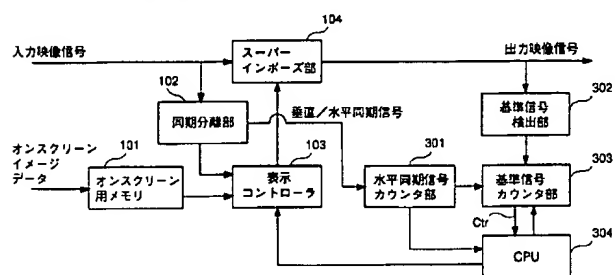
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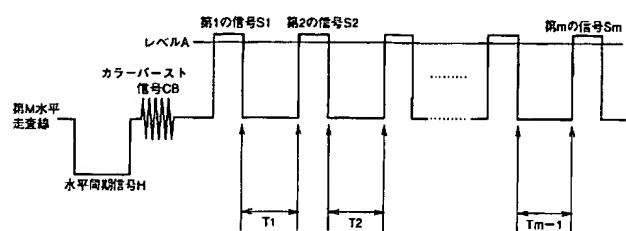
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Drawing selection drawing 10



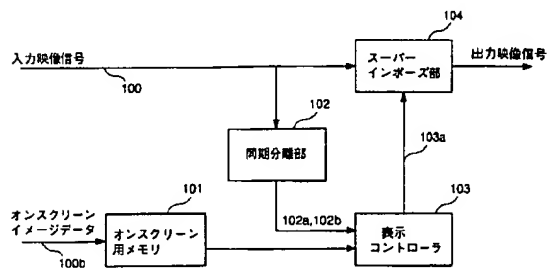
[Translation done.]

Drawing selection	drawing 11
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[Translation done.]

Drawing selection drawing 12



[Translation done.]

Drawing selection

禁止画サービスへようこそ

1. 市校所からのお知らせ
2. テレビショッピング
3. 席数予約

ご覧になりたい項目を選択し
決定ボタンを押して下さい。

[Translation done.]

Drawing selection drawing 14 ▼

停止画サービスへようこそ

1.市役所からのお知らせ

2.テレビショッピング

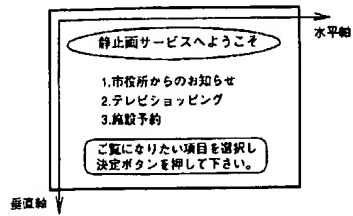
3.施設予約

ご覧になりたい項目を選択し
決定ボタンを押して下さい。

カーソルCS

[Translation done.]

Drawing selection drawing 15



[Translation done.]